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long piles of stones are thrown up, for the protection of the inhabitants against shot from the roadstead, a precaution which the wanton conduct of the Spanish slavers has suggested; and the arrival of one of these, accordingly, for the most part, sends the inhabitants to the mountains, at least during the night, forty-six of them having been lately surprised and carried off as slaves, and eighteen deliberately massacred by one of these vessels.

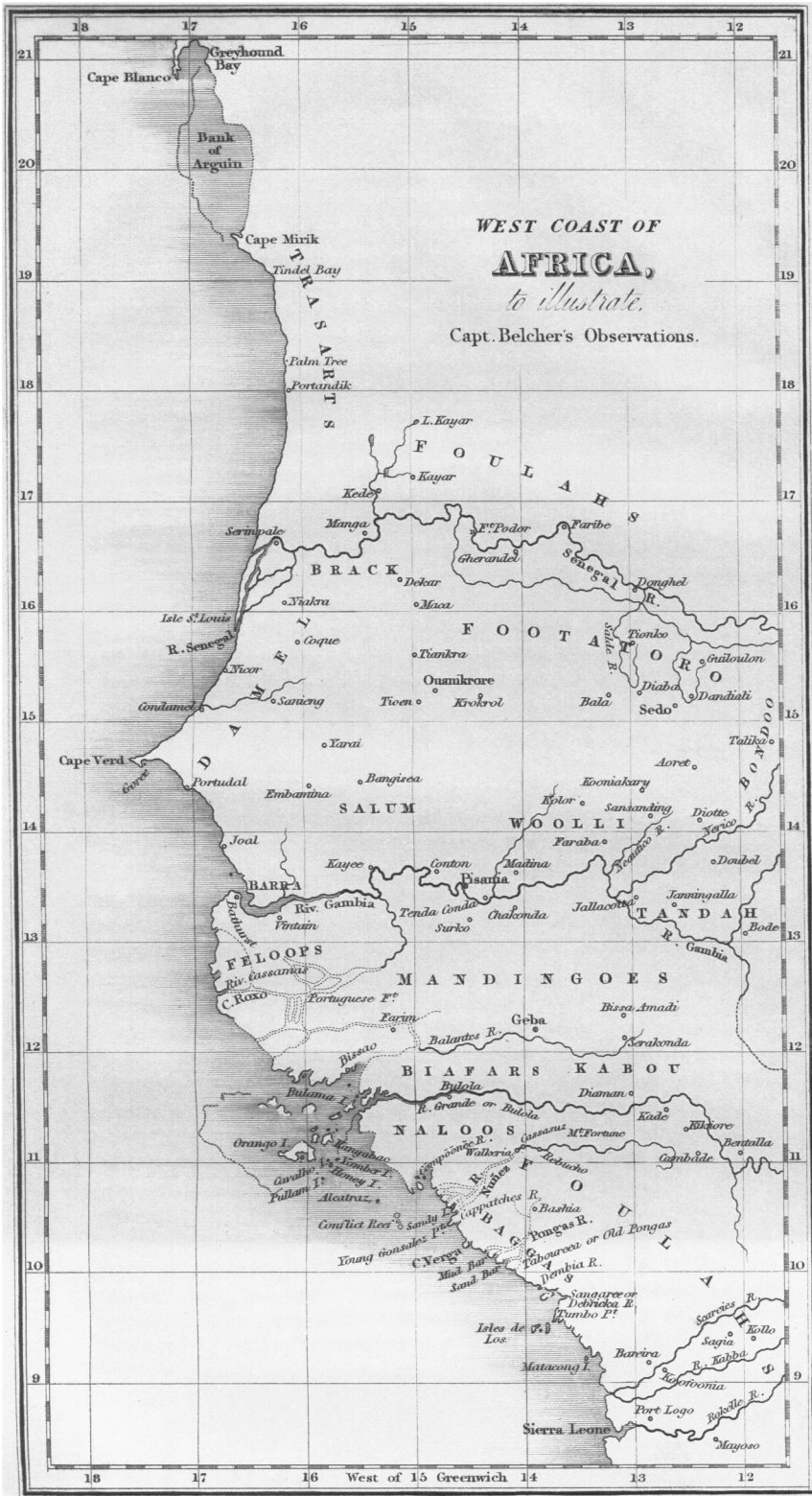
Anno Bom, from its small size, distance from the coast, and bad harbour, has never risen to importance; but yet, in many respects, it seems to me more eligible for a settlement than any of the other islands on this coast. It is decidedly the driest and most healthy; and the inhabitants would receive any permanent establishment with open arms, were it merely as a protection from injuries of the above nature. It is not included among the titles of the Portuguese governor of St. Thomas's, and is entirely independent of him.

IV.—*Extracts from Observations on various Points of the West Coast of Africa, surveyed by his Majesty's Ship Ætna in 1830-32. By Captain Belcher, R.N.*

THE survey commenced at the Isles de Los, which consist of three principal islands, Factory, Crawford, and Tamara, or Footabar islands, besides several small islets or reefs, inclosing a convenient and safe anchorage for shipping. On Factory Island is a small factory which keeps up a communication with the main, the natives thus procuring English goods for rice, wax, hides, a little ivory, bullocks, goats, fowls, yams, pumpkins, cassava, bananas, limes, cola (the coffee of Soudan)\*, pistachio-nuts, and, in the rainy season, oranges, and a few other fruits. Factory Island is well cleared of its woods, but the others only partially so. Good water is to be had on Tamara Island, and all the islands are said to be healthy, but with something, perhaps, in the atmosphere, or mode of living, which favours the formation of cataracts in the eye, many of the natives being affected with them. Vessels with much sickness on board might certainly resort hither with advantage. The thermometer at noon stands generally about 82°.

The Isles de Los are of volcanic origin, being formed chiefly of hard blue and iron-coloured lava, with occasional masses of

\* The Mandingo name for this is Gourou, which they pronounce Wurru. It is astringent and bitter, and seems to contain tannin. The natives use an infusion of it, which resembles coffee; and as, when eaten raw, it removes hunger, it is carried in expeditions for this purpose. As an article of traffic it is said in some parts of the interior to be worth its weight in gold, being used by the natives whenever they can procure it.



porphyritic hornstone at different elevations. Of the vegetable productions the most remarkable are the palms, which furnish palm-oil and wine, and the silk cotton-tree. The natives also speak of a tree, the bark of which is an excellent bitter; but it was not seen.

The natives belong to the tribe named Baccas, or Barkas, who also occupy other islands along the coast. A great similarity exists between their language and that of the tribes inhabiting the banks of the Nuñez.

Tumbo Point is about two miles distant from Factory Island; and is a long rocky flat, partly covered at high water, and divided from the main by a narrow channel, navigable for canoes at high water, but nearly dry at low, where the natives affirm that they can walk across, though the depth of mud makes this improbable. From this the main-land rises gradually, and partakes much of the features of the Isles de Los, without, however, being quite so denuded as the summit of Tamara. The whole interior is mountainous, the highest peak of which we could obtain a measurement being 2910 feet above the sea. This mountain is called Kakulimah. Farther on, the Sangaree, or Soomba ridge, commences, which forms the entrance of the Sangaree, or Debrika River. Its highest point is called Tikitee-chin, or, as pronounced, Tikit-chin, and is 1705 feet above the sea. Its western point is that called Alligator's Point on the chart; off which the mud extends above a mile, dry at low water.

The whole of this bay is one series of flats and reefs; and no vessel drawing above six feet should venture within a line drawn from Tumbo to Alligator Point. Vessels drawing fifteen feet water should not, when working up along this shore, do more than open Crawford Island; and to ensure good room, should even tack when the west end of Tamara opens the south end of Factory Island. Within these bearings the soundings are very regular, and no where less than five fathoms.

The coast appears to be an immense series of islands, some forming, others disintegrating; so that in twenty years its aspect will be probably materially changed. The entrance of the Sangaree River has at present two fathoms in it; but there is little inducement to ascend it, there not being the slightest trace of trade along its shores, nor any supplies to be procured from them, except of wood. The water is scarce and bad. The Ætna's boats ascended fifteen miles.

From Alligator Point the coast runs north-west (true) five and a half miles to a small island in the centre of a river called the Dembia, but which is, in fact, a mouth of the Sangaree. It will admit very small vessels; but the greatest depth is only one fathom at low water, where the sea curled. Thence the shores are

low, and thickly clothed with mangroves, extending about sixteen miles to the first acknowledged mouth of the Pongas, called Tabouria, or Old Pongas; but another inlet occurs within the distance, which could not be approached; neither, indeed, was the Tabouria examined, the line of breakers being a mile outside of it; and being only used by canoes which, keeping within the breaker line, communicate thus along shore without much risk, it was deemed unnecessary to incur hazard and delay by its examination. Three miles beyond Tabouria is the Sand-bar entrance to the Pongas, and about the same distance farther, that called the Mud-bar. The first is constantly shifting, and therefore very unsafe. The second is only muddy in the channel, the banks being hard sand, and may be entered easily and safely at high water by vessels not drawing more than twelve or fourteen feet. From the flatness and uniformity of the shore there are few or no leading marks; but the channel is sufficiently distinct with a little care.

The resources offered by the Pongas are few, without proceeding a great distance; and even then appear but trifling, and cannot be obtained by money. The trade is confined to rice, skins, bees-wax, cola-nut, gold-dust, a small quantity of ivory, and slaves. Stock is scarce, the water bad; and arms, ammunition, tobacco, and handkerchiefs, are the only equivalents coveted. The seine was hauled twice off the entrance with good success; and some varieties of fish were procured, not previously known. One was a species between the shark and raia, having the teeth of the latter, but otherwise resembling the former. It is one of the finest fish on the coast; the fin parts, like those of the skate (raia vates), making most excellent soup; and, as another great advantage, it does not decompose so rapidly as other fish, and was kept good for two days in the *Ætna's* boats. The cat-fish (*silurus*) was also taken; and though treated usually with disdain is both a well-tasted and peculiarly wholesome fish; in proof of which it may be added that the natives give it a decided preference, and are rather cautious of others.

About four miles north of Mud-bar is another entrance of the Pongas, but very shallow; and beyond is a deepish bay, the western extremity of which is called Cape Verga, which is the termination of some moderately elevated land, and not a mangrove island, as laid down in former charts. A long dangerous spit extends from this six miles and a half to the north-west by compass, north  $75^{\circ}$  west, true. Beyond is a deep bay, into which no vessels venture which draw above four or five feet water. The chord crossing it to the mouth of the river Cappatches is in the direction north  $21^{\circ}$  west (true), fifteen miles, on which line the depth seldom exceeds one fathom. The Cappatches is a trading

river, but shallow, and only frequented by boats, or vessels drawing not more than four feet water.

About five miles true west from Cappatches is the point called Young Gonzalez, the south-west extremity of the southern minor inlets to the Rio Nuñez. It is a small island, from which a long dangerous flat of rocky ledges, gravel, and sand, extends to the south-west, by compass, nearly six miles. At low water, a patch, three-quarters of a mile in length, is about six feet above water. Its composition is a coarse red sandstone, or conglomerate, like lava till broken. Young Gonzalez is the southernmost of three islands, having channels communicating with the Nuñez; its distance from the regular entrance of the river is about five miles.

Vessels bound to the Nuñez should make the land in  $10^{\circ} 30'$  north; or, if coming from the southward, should, at least, not come into less than seven fathoms till in that latitude. They will then approach the river, steering north  $75^{\circ}$  east, true, or south  $86^{\circ} 30'$  east, magnetic, through regular soundings; and it is chiefly necessary to remember, with a flood-tide, that there is a dangerous rocky flat on the starboard beam going in, while, on the other hand, a vessel may play with the edge of the breakers on the point of the Sandy Island on the larboard side. The constant warning, also, 'Keep in mud,' which is familiar in all channels along this coast, should be here especially kept in mind.

To a vessel wishing to refit, no place can be better adapted for the purpose than the Sandy Island just mentioned. It is uninhabited. A vessel may be moored safely within one hundred and fifty yards of low water-mark, or even less if required; but should be prepared to haul off in the event of a tornado. Small vessels may be grounded, or hauled up, for repair or examination; a space sufficient for the encampment of the crew even of a line of battle ship is free from trees; and stores may be conveniently landed. Immense quantities of drift wood lie piled on the south-west side; and plenty of live timber grows on the island, of which the palm yields an excellent cabbage for the use of the sick or convalescent. It makes a delicious pickle; and is considered one of the finest anti-scorbutics in the world, doubly valuable when other vegetables are not to be had. Fresh water alone is scarce and ill-tasted; and a great annoyance arises from the clouds of fine sand which are incessantly in motion over the island. The temperature, when the *Ætna* was there in the month of April, did not exceed  $105^{\circ}$  in the tent; which was, however, oppressive, from the necessity of keeping it pretty well closed to prevent the sand from imbedding the instruments. A breeze generally prevailed throughout the day, except between nine and noon. The western side is by far the most cool and pleasant, but not so convenient for communicating with the ship.

The Rio Nuñez is very serpentine, and the trees on either side impede the wind in its true course. Still, however, a pleasant, and, after noon, even a fresh breeze generally favours vessels bound up, and affords favourable slants in many of the reaches down. The general depth may be stated at two and a half to three fathoms low water, with a rise and fall of about twelve feet; and although the lead generally gives mud, the anchor frequently hooks a rock, and good and long buoy-ropes are especially necessary, which should be got on board the instant the tide slacks, to be in readiness to trip the anchor in a moment if found foul. The change of tide is very rapid, and much inconvenience will be felt if completed before breaking ground.

There are three principal settlements on the Nuñez, the Walkeria, Cassasez, and Debucko; all near each other, and from seventy to eighty miles up. The first is named after the surgeon of a slave-ship, who settled here about thirty years ago. We had formed great expectations of the supplies which could be procured at these settlements, but were much disappointed. Bullocks and sheep could be procured with some difficulty: fowls were very scarce; and vegetables could not be got at all. These native towns are never prepared to meet a sudden increase of demand for food. Of rice alone they seem generally to have a superfluity. Their trade here is the same with that along the adjoining coast, but on a somewhat larger scale; and their dealings in slaves they do not affect to conceal.

About half-way up the river to Walkeria, that is, about thirty-five miles up, is a rocky barrier or dyke, of very singular formation. It presents the appearance of a basaltic formation disturbed by igneous action, the sides having a scoriaceous look; and has lifted itself through what is apparently a perfect flat of columnar basalt, but which, under the hammer, proves to be red sandstone. The dyke itself is a mixture of ferruginous sand, with coarse quartz grains and balls of a jaspery nature, forming a coarse conglomerate, exhibiting, both internally and externally, marks of fusion. It is in two pieces, with a gap about twenty-five feet between; is nearly fifty yards long by two wide; and rises perpendicularly through the disturbed stratum about eight feet; direction east and west. The disturbed stratum is a fine sandstone, with columns as perfectly prismatic as any basalt ever seen. A little to the northward is another similar formation, but comparatively undisturbed, having only a slightly arched back, presenting the appearance of a carefully paved landing-place. The columns are not above eight or nine inches diameter; and some pieces brought away were only three to four inches, by five or six long.

Below Walkeria not a single habitation was observed on the

Nuñez, though the cultivation of its banks might be profitably pursued. The want of fresh water prevents the natives settling here; but, from the nature of the soil and elevation, there can be little doubt that it would be found on digging. The principal internal trade is maintained with the Foulahs, who take in return for their goods, salt, cloth, &c. They travel in parties of twenty to forty, armed with spears, bows, and arrows, the last said to be poisoned. They are a shrewd intelligent people, very active, and are said to possess great bravery and perseverance, and to be inured to hard labour. It is they who bring down slaves to the coast; and it appears scarcely possible for British subjects to traffic with them, without becoming more or less implicated with this trade. The Foulahs travel five days (to their country from hence), at the rate of twenty miles a day, and rest two. They generally carry on their heads bales amounting to sixty pounds weight, the heaviest containing salt and beads. Their return is gold (in rings weighing from one to ten ounces each), ivory, slight manufactures of leather, pouches, rice, and fruit. The gold is obtained from alluvial hills; and iron is said also to abound in the neighbouring country; with some hot springs, but none near the settlements.

The range of the thermometer while the *Ætna's* boats were in the river, that is, about the end of March and beginning of April, was, at six A.M., from  $75^{\circ}$  to  $84^{\circ}$ ; at noon from  $84^{\circ}$  to  $94^{\circ}$ ; and at nine P.M. from  $81^{\circ}$  to  $83^{\circ}$ . The dews were slight; but at other seasons were said to be very heavy, accompanied by a fog, lasting frequently till noon.

The river is called Kakundy by the natives, and above Cassasez, two miles above Walkeria, is much interrupted by rocks of close grained basalt, several of them presenting a perfect columnar formation. At Debucko, eight miles above Cassasez, some fragments of close-grained clay-slate were also observed to be used for building, and said to be procured in the neighbourhood. Ten miles above Debucko the river is fordable, and at fifty miles merely a stream, with repeated falls. At Debucko the water is fresh at dead low water, and vessels have watered one mile above it. Alligators abound here, and some are of considerable size. It is said that they have never been known to attack any one above Walkeria; but below it the instances are numerous. Off Cassasez they were playing about the boats continually, and one came along-side, and exposing his ugly head, with distended jaws swallowed the paunch of a sheep which had just been slaughtered. Another struck the gig with considerable force.

The aborigines on the Nuñez are called Landamahs, their language being, however, nearly the same with that of the Baggas; and both still call themselves Saffres, the name they bore when Sir



John Hawkins first carried away some of them as slaves. They have a tradition that they came originally from the east. The Baggas, Baccas, Barkas (for they all differ in their pronounciation), are a peculiar tribe inhabiting the exterior Mangrove islands from Nuñez as far as the Isles de Los, and vary much in their manners, being sometimes friendly and hospitable, and often the reverse. One division of them, who occupy the island of Talabooncho, near the mouth of the Nuñez, (and of which some remarkable trees are there a principal land-mark,) are complete pirates, treacherous, cruel, and oppressive. They muster strong, with fire-arms, and seldom quit their island. Their town is close by the trees in question, which are seen to the northward of Sandy Island on entering; but they are found on all parts of the same island.

It is difficult to imagine how the Baggas exist on these exterior islands. They are in general populous, and yet do not, for the most part, contain fresh water. The consumption of palm-wine on them is great, but this cannot altogether support the inhabitants as drink. The palm-wine is the fermented juice of the head of the palm-tree; and is obtained by driving a hard peg, or boring with a gimlet into this head, or cabbage. A stream of liquor flows into a calabash suspended beneath it; and by the time it is filled (about six to eight hours), fermentation has reduced the whole into a milky-tinted, pleasant beverage; but the natives generally allow this to proceed too far, when the wine acquires a harsh, bitter flavour.

The various uses to which the palm is applied are remarkable. It is truly the 'natives' friend,'—it supplies wine, oil, fishing-lines, hats, baskets, palm-nuts, and, by taking off the head, a most excellent repast in the cabbage, which will feed a family of ten or twelve. Between the young branches, also, covering the cabbage, a fine, cotton-looking down is found, which when scraped off dries almost instantly, and forms an excellent tinder, resisting wet, and used, accordingly, to convey fire along the surface of the water, from boat to boat, when fishing. It is lit, and being thrown overboard, is picked up as it drives along. And there are other uses still to which different parts of the palm are applicable.

Sandy Island is in latitude  $10^{\circ} 36' 37''$  north; longitude, by chronometer,  $14^{\circ} 42' 19''$  west. Forty years ago it was a mere sand-bank, even at low water; subsequent deposition, however, has not only formed it into an island, at least six feet above high water, and bearing large trees, with a fair surface soil, but has also added a very extensive range of shoal on its northern, western, and south-western sides. It is said that a passage into the river once existed on its northern side, as well as on its southern, but this seems improbable, as the bottom there is rocky as well as sandy. It is remarkable generally on this coast, that wherever rocks are thus

found, sand-flats also exist, although surrounded by mud, and without any apparent source for the supply of sand. This is not strictly the case at the Nuñez, there being a red sandy cliff, in course of disintegration, on its south-east side; but the identity is even here not certain, both the colour and size of the grain being very different. Further north than Sandy Island, there is still a passage into the river for vessels drawing less than twelve feet; but it is narrow, tortuous, and appears rapidly filling up.

After passing Cape Verga, the *Ætna* lost the land breeze, which had previously blown with extreme regularity from about 10 P.M. till morning, and been calculated on with certainty in moving the ship along-shore. The winds also became much affected by changes in the tides and time of the moon; as, for example, if it was low water at noon, there was seldom wind enough to move the ship till the first quarter flood, and then the tide was too strong to weigh. The weather also became more hazy, so as to prevent the use of the sea-horizon; and, for the three days preceding full and change, this was so much the case, as very inconveniently to shorten the bases of the triangulation.

As former visiters, however, had held much aloof from this part of the coast, and as even the natives on the Nuñez professed to know little about it, I resolved to persevere along-shore as close and as long as circumstances and the season would permit; and found the channel less intricate, to a certain distance, than expected. We made out three mouths to the Nuñez; and ten miles north of the northernmost, much to the westward of where land was expected, saw a cluster of islands, which gradually showed their close approximation to the main; and were ascertained to form the north and west boundary of the entrance to a river, or inlet, larger at its mouth than the Nuñez; and, at twelve miles within, the distance to which we surveyed it, deeper, swifter, and promising as large or larger branches. From the transparency (comparative) of its water also, on the ebb, it appears to be either an outlet of the Rio Grande or of some other extensive drainage. Where we stopped, it came from the east, and showed several extensive arms leading to the north and west. The entrance which we ascended has two large channels equally navigable, but its mouth is so studded with shoals that, until better known, few vessels will probably venture into it; the natives north of the Nuñez having also the general reputation of being dangerous. The western entrance is equally fair and navigable to the sea. The northern alone is very shoal, and probably only passable for canoes: several of these were seen at a distance, and one country schooner; from which, and the numerous fires at night, it appears probable that the banks are well inhabited, and have some traffic. But the delineation of the coast-line was a more urgent

service for us than a further examination here, as the tornado season was rapidly approaching. The islands did not appear inhabited ; the howling of wild beasts on them being incessant, and their marks plentiful.

We endeavoured to persevere, therefore, to the northward ; but on pushing round the reefs to the north-west, found ourselves completely intercepted by shoals and breakers, which took their rise from the westernmost island, and, as we proceeded, formed a circular band round us, from north-east to south-east by the west. We were thus situated on the 10th of May, when visited by thick hazy weather, followed by rain, strong winds, and a heavy swell. I became convinced, therefore, that no more time was to be lost here ; and, on the 13th, having caught a moment of clear weather, which showed us the line of breakers continuous from the N.W. land, round to the S.S.W., we made sail to the southward, and, by carrying a press of canvas, cleared the dangers just before dark. After which we were visited by the first tornado of the season, now decidedly set in, and experienced similar attacks, three successive nights, at the setting of the moon, when we constantly prepared for them.

During the severe service which we thus concluded, the crew of the *Ætna* suffered much ; and scurvy appeared to enter deeply into their constitutions, giving even the least scratch a tendency to become a dangerous wound. Fish diet was found to aggravate this ; and it is worthy of remark, that when our ships used to suffer so much from scurvy, stock-fish was a portion of their allowance. The only thing which appeared materially to check the disease, was beer, made of the essence of malt and hops ; and I feel satisfied, that a general issue of this on the coast of Africa would be very salutary, and have the effect especially of keeping up the constitutions of men subjected to heavy labour in boats. The fresh-meat diet, which our crew obtained afterwards at the Gambia, was of much less obvious benefit than was expected.

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*Same Survey renewed in 1832.*—My first object was now to carry our line again from Rio Nuñez to the termination of our labours last season ; after which I proposed examining, at more leisure, the river then discovered. Accordingly we began our operations at Sandy Island on the 12th of February, and, on the 20th, made the rocks of Conflict Reef, precisely in the bearing given by our work last year, although our approach to them was very circuitous, involving the errors incident to at least sixty miles of triangulation by sea.

I now, then, securely moored the *Ætna*, and proceeded in the *Raven* (tender) and boats to explore the river. Having passed

over ground, as last year, varying from four to fourteen fathoms, about three miles beyond our then limit we came suddenly on a chain of reefs which nearly barred our passage, and through which it cost some time and some little damage to the boats to glean a passage. Eventually we succeeded, although I thus became satisfied that only small vessels could navigate this river without great risk. I could have warped the *Ætna* through, but certainly not sailed her; and I even anchored the *Raven* here, and prosecuted our investigations beyond in the boats alone.

Above this barrier the channel was sufficiently deep for larger vessels than the *Ætna*; and with only some few dangers easily avoided, being above water at half tide, and showing strong riplings even at high water. The scenery, as we ascended, became very picturesque; and, in some spots, was even splendid for this coast, where all may be so nearly described as mud and mangrove. The land being *terra firma* in the literal sense, the shrubs were in great variety, and the banks were in many places even completely guarded by close-set clusters of the pandanus or screw pine, a tree which I have not observed in any of the other rivers, and which is not usually considered a native of Africa. Its perfume is well known; but it was now just out of flower. On our passage up we observed several groupes of natives, apparently very timid, and in a state of nature. They were, however, pretty numerous, if we might judge from the fires in every direction, and the perpetual sound of tom-toms (a kind of drum) during the night.

We had ascended about twenty miles by the evening; and, at low water, found the stream brackish, but quite fresh enough for cooking. Ten miles farther it was quite fresh at low, and at forty miles nearly so at high, water. Alligators and hippopotami were plentiful, with occasionally groups of monkeys; but we saw few birds, and these merely great fish-eagles, herons, spoonbill, and kingfisher, with occasionally doves and guinea-fowls heard and seen inland, but beyond our reach. On the second night's bivouac we found the water of the river infinitely preferable to that we had brought with us, and perfectly clear. The banks of the river had also begun to show stony landing-places, with grassy points, and but little mud. The course of the river was generally to the northward, and frequently N.W. to W.S.W.

I now began, from the even width, (of about a quarter of a mile,) to entertain hopes that this would prove a branch of the Rio Grande, if not rather the *true* river of that name, the other being merely an estuary; and though about four o'clock, on the third day, these hopes were suddenly damped by perceiving the headmost boats 'round to' simultaneously: on coming up with them, I found they had merely discovered some huts on the hill, and observed others on the opposite side of the

river. Here, then, we landed, and found several natives residing on a small eminence. One man understood English sufficiently, by the assistance of signs, to make out that we wished to know the name of the river, and immediately called it the Compoonee. After a short time he began to recover himself a little, and apparently understood more than he wished us to believe. Upon naming the sister river, Río Nuñez, I expected confirmation of that name being the one they had given, but they did not appear to comprehend. It then occurred to me that they might know it by its native name, and the instant I had named Kā-kōōn-děe they understood me, adding, Dēbūcko; and, tracing it on the ground, I put this river above it, when they immediately repeated Cōm-pōōnēe, pointing to the water. Latterly the black I have mentioned found his tongue, and gave us to understand that he had been up the Kakoondee in a canoe to Debucko, and bought the clothes he had on (he was the only clothed person we saw) of Mr. Proctor, whom they always designate as Proggot, but that they seldom communicate with any one by water. I further learned that the king's name was Dōōk-līn, whose residence was a short distance from the huts; and that the river was navigable for canoes only one day (about thirty miles generally) above our position. We immediately proceeded, therefore, with the light boats to explore its extremity if possible before dark, and found the information correct as to the obstruction to larger boats, it being impossible, in our lightest gig, to pass the rocky bed of the river, which was beautifully transparent. The banks exhibited marks of a current of amazing force, at least four feet above the present level,—no doubt that of the rainy season. The roots of trees denuded by the stream, and apparently much strained in the direction of it, exhibited certain evidence of the *torrent*, which must continue for some months, as at this point the tide had lost its influence. It was indeed a pure fresh-water stream. Fish there certainly were, as I saw them leap occasionally, but we could catch none.

The village was apparently well stocked with fowls, goats, &c., houses for which were built on stakes about five feet above the ground, (like pigeon-houses,) to prevent the depredations of wild beasts. Even the goats were compelled to ascend a ladder into one of these pigeon-houses. In the centre of the area in which the huts were built, skulls, horns, bones, &c. of deer, buffalo, sheep, and wild beasts, were piled, with a few pieces of iron, evidently ship furniture, which they described as belonging to a vessel '*broken*' on the rocks outside of the river, between this and the Kā-kōōn-děe.

About sunset the trees displayed numbers of (wild) Guinea fowl at roost; but the closeness of the country rendered any ap-

proach to them impracticable, principally from the defences which nature has placed on the banks in the shape of the pandanus, almost impenetrable even to those well-clothed, but bidding defiance to our species at least, in a state of nature, as were the few natives who came in our way.

Buffalos, hippopotami, deer, lions, panthers, monkeys, &c., must be very numerous, as wherever we landed near mud we found the impression of their feet in every direction, quite recent, showing their visit to have immediately preceded ours, as the tide would have obliterated the impressions. Mr. Arlett, at one of his positions, found a hippopotamus amusing himself breaking the trees; but the report of a musket was merely answered by a roar; he was not inclined to make our acquaintance.

In our downward progress we met one or two groups of natives not quite so timid, and evidently wishing for a nearer acquaintance. They were fine athletic fellows, armed with swords and muskets, and with open cheerful countenances. Unfortunately the mud and a falling tide would not admit of a nearer approach, although one attempted to wade some distance through to join us. They had each a covering for the lower extremities, which was secured round the loins, and apparently formed by strips of palmetto, which gave them rather a graceful aspect, not unlike the hanging mail worn to the knee, as frequently represented on the stage in Roman costume.

About fifteen miles above the position where the Raven was left, we passed a very broad channel, leading to the northward, and very probably into the Rio Grande. Indeed, there are three great openings unexplored, but they did not apparently offer so much probability of success as that by which we ascended. My opinion is, that the whole of the space between the Nuñez and Rio Grande is one great archipelago, and navigable at high water for vessels of four or five feet draught; yet it is strange (although I saw last season a country boat under sail passing through one of these channels) that the natives on the Nuñez were ignorant of this river, or, at least, pretended to be so. It is generally believed by the most intelligent white residents, that canoes can navigate from Isles de Los to the Gambia, within the islands of this (supposed) huge archipelago, and the natives do not hesitate in affirming it to be possible; but fear, they say, prevents their passing through the hostile tribes.

In taking leave then of the Compoonee, all that can be said respecting it is, that it is a very extensive river, and has yet three arms unexplored, although I cannot possibly suppose any advance beyond geographical knowledge to be obtained from further examination. The shoals to be passed in order to arrive at its mouth, the intricacy and danger of its navigation to Raven's Rocks,

will prevent any vessel, otherwise than for the purposes of discovery, from attempting it, for no commercial advantages are to be expected. That we have added a new river to the list on this coast, and defined the coast-line from the Nuñez to Doubtful Island (as I have named the westernmost point we attained), is certainly satisfactory.

We now then recommenced the survey with fresh energy; and as there was much sounding to be performed, and some intricacy in the examination of the reefs, I determined to ascertain, on shore, the latitude and longitude of the islot of Alcatraz.

The landing was not at all difficult, but the whole summit of the rock was covered with boobies (*pelicanus sula*). I directed the boat's crew to collect the eggs, which exceeded five hundred, and afforded a grateful treat to our salt-fed crew, being large, and not much inferior in quality to those of the plover. The second and third days we collected from one to two hundred; after which they declined laying more for our gratification. We had them cooked in various ways, but the most palatable was an omelet.

The customary nuisance in islands where these birds reside, was experienced here in its fullest extent; and nothing but the feeling that, in pursuit of science, every consideration of comfort must be sacrificed to attain the object, induced me to endure the almost pestiferous odour to which I was subjected for forty-eight hours. But this annoyance was trifling compared with one still more odious, viz. a species of minute blue louse, common to pelicans and other water-birds of this climate, approaching in character to the acarus, or tick, almost imperceptible, but which, inserting its head beneath the skin, added bodily irritation to the former evil.

At night the clamour of myriads of these birds, taking up their positions *en masse*, on two-thirds of a space of sixty yards diameter, defies all description. Every moment a fresh party coming in from their cruize, made directly for our lights, and occasionally coming in contact with our hands, did not neglect to give us proof of the sharpness of their bills, independent of the great nuisance of frequently placing us in darkness at a most critical moment, and bedaubing the instruments, particularly the object glass of the transit telescope. However, I felt fully repaid for my miseries; and those who shared them with me were not disposed to view them as *hardships*; in fact, I believe the change and diet were viewed rather as a *pic nic*! Wishing to procure one or two of the finest birds for skinning (without killing some useless dozen), I sallied forth with one of the 'reading off' lamps, and examined 'the host.' After their clamour had nearly subsided (about midnight), I found them all awake, closely huddled together, forming a black crown to this otherwise white islet. None attempted to

move, but, boobies as they were, foolishly stared at the light, and, without the slightest resistance or noise, suffered themselves to be handed out by the bill and examined.

Why this island has been called Alcatraz I cannot exactly comprehend, unless the Spaniards include the whole tribe (of pelicanus) under that designation. (Their alcatraz I have generally understood to be the pelican, common.) It is decidedly a volcanic production, and differs but slightly from the reefs which occur between it and the Nuñez. It is, however, of a coarser amygdaloidal trap, partaking less of the ferruginous sand, and at the base has a soft bed of steatitic clay, which hardens on exposure to the atmosphere. When I detached my specimens it readily yielded to the knife, not unlike hard soap; but in forty-eight hours was harder than chalk.

The extreme height of Alcatraz is forty feet above the sea, being nearly level on its summit, but traversed, almost down to the water-line, by fissures, which gape from one to five feet. Not a vegetable production of any kind is to be seen on it. The extreme length above is sixty yards, and one hundred at its longest base. The summit, as may be supposed from the constant visits of the boobies, has *soil*, which is about three feet deep in some places, and occasionally so far indurated as to form a porous chalky-looking stone, not much unlike some of our friable oolites of Somersetshire and Gloucestershire. Sharks and turtle are constantly in sight; the former so bold as to attack the oars, and frequently leave marks of their teeth on them; the turtle not to be caught, or we, at least, not expert enough to take them.

Alcatraz may be approached on the south-east side; but an extensive range of reefs stretches five miles off south-west (true), and about three miles in width, at right angles to this bearing. The latitude of the northern extreme of the summit is  $10^{\circ} 38' 1''$  N., longitude  $15^{\circ} 20' 30''$  W. On examining a small sand islet, capping the nearest reef to it, I discovered part of the stores and lading of a vessel, which must have been wrecked here some years ago. Her cargo apparently consisted of cam-wood and ivory, pieces of which we found almost *imbedded* amongst the rocks; even large rocks occasionally overlaid them, showing that these reefs are subject to violent convulsions from the severe south-west gales. The coppers, anchors, boom-irons, leaden hawse-pipes, &c., were perfect; but the iron was useless, excepting one fluke and shank of an anchor, which, after hammering off some *flakes* of rust, were converted into a beacon anchor. Some of the pieces of ivory also were *turned* to account by forming candlesticks for the intensity instrument, and other magnetic observations, being free from attraction. The cam-wood had been freely tasted by the teredo, and was of no value.



Having completed our work here, we slowly crept to the northward, towards the inhabited islands; and at length, on the 6th of April, much to our relief, trees were again visible, and promised some variety from our late monotonous labours. After completing the ground about Pullam, Honey, and Yomber Islands, I carried the *Ætna* through the channel, which, although intricate, is *safe* for vessels of *any* size, assisted by the chart and their boats, as the tide (which however is not so rapid as in the great channel) shows by its rippling, where the boats may anchor to mark the channel should any doubt otherwise exist. The best time for entering the channel is at the last quarter ebb, when the dangers are mostly visible. The *Raven* was worked through to the eastward of Yomber; but no vessel should attempt that passage unless on a similar duty.

Being at length in the immediate neighbourhood of inhabited islands, I considered myself certain of supplies of fresh meat and vegetables, but was doomed to be sadly disappointed. After landing, going to their towns (inland), and using every effort we could suggest to induce the natives to sell their bullocks, we found it no avail. They would listen to nothing but '*arma y polvere.*' These we could not spare; and to add to our chagrin, found herds of the finest bullocks I have seen on the African coast, crowding the beach at our embarkation, no doubt driven down in the expectation of sale; their owners, too, evidently disappointed. I made a second effort at another town to the northward, in what I have called Dămăcōn Bay (this being the king's name, and his majesty visited the ship with the chiefs, while we wooded and watered); but was here equally unsuccessful. We procured some few fowls, two goats, and bananas, for tobacco and buttons, but nothing more. Never have I witnessed more general disappointment on both sides: all the officers were on shore, endeavouring by various means to effect the purchase of bullocks or vegetables, but without the slightest chance of success;—the universal answer was, '*Arma, arma.*'

These people are well described in Captain Beaver's work; and the same ceremonies he alludes to, previous to entering into their town or trafficking with strangers, viz. the presentation of a cock, and drinking palm-wine, &c., was observed towards me; (although the cock, in my case, was black).

At Dămăcōn Bay (Kanyabac) water may easily be obtained, and in any quantity; but I should much doubt its salubrity before passing the filtering machine, boiling, or other purification. The place where it is obtained is a pond or reservoir, which runs parallel to the beach, and then inland amongst the trees, where wells may be dug and very clear water obtained. But this reservoir (although supplied from a spring as fast as it oozes

through the sand into the sea) is so constantly filled with fallen leaves that the perpetual vegetable decomposition must render it of very doubtful character. It is preferable, however, to that procured at the Gambia or Goree; and, when drawn at the spring, (where it rises under a natural bower,) it was pure as crystal, and excellent. I have not the slightest doubt that, were casks sunk and allowed to remain quiet for twenty-four hours, most excellent water could be obtained, as it would rise within six inches of the level of the ground. At this spot we also wooded with great facility.

The soil of the island appears to be excellent, composed chiefly of decomposed lava and vegetable matter. Vegetation is luxuriant, and the natives seem inclined (or are probably impelled by necessity) to make the most of it. Our visit happened in the dry season, therefore under every disadvantage; yet to judge from the condition of the herds of cattle constantly parading the beach, they found abundant nourishment. They were invariably in the finest condition, of moderate (rather small) size, and the best proportioned beasts I have seen on the coast. Some wanted horns, which is not usual in the breed of the coast.

During our visits, which did not bring us together above twelve or fourteen hours in all, I did not perceive the natives touch animal food or vegetables of their own produce. The couscous and palm-nut, pounded into a cream, were prepared by the women, and not without some labour. The males (excepting children under three) ate from a separate dish, and the women by themselves. The only labour I observed the men take upon themselves was climbing the palms to set their calabashes, and bring away the palm wine; and, in fact, the women performed all the laborious duties of the household, the men attending to hunting, fishing, and not unfrequently marauding, when they can find their way across to the main. They are not particularly partial to Bulama; and the name of Beaver (whom they style Bèbèrè) very nearly produced some disturbance with a chief, a relation of the king, whose father, he intimated, was killed by Captain B. himself. The assistant surgeon, hearing them talk of Bulama, had simply asked if they recollected the name of Beaver. The chief in question had then just landed from the ship after copious libations of rum, and perceiving, at the instant, a small boat's union hoisted, as a mark for the watering-place, possibly associated it with the idea that we intended to take possession of their island. However, after a little blustering, his displeasure took an opposite direction, and he quarrelled with his own companions. The affair terminated in our having his authority, as chief of the district, to do what we pleased,—wood, water, &c., of which at first there appeared some doubt; and none of the chiefs interfered, or appeared on the beach afterwards.

The men are generally furnished with a musket, knife-dagger, (answering both purposes,) spear, and, in a few instances, a sword, in most gorgeous hangings, as far as brass nails and bits of red cloth can go. The muskets I examined, suspecting they were more for show than use; but they were invariably loaded, ready for service,—the charge being, in some cases, bits of iron beaten into slugs, in others about an inch of iron plug, evidently cut from a bar of nearly the bore of the musket. This is intended for the elephant, which, by their gestures and a molar tooth they produced, appears to reside here. The hippopotamus I saw off the S.W. end of the island, and much larger than I have seen in the rivers;—he appeared to have barnacles attached to him. It has been considered doubtful whether these animals frequent salt water at any distance from the mouths of fresh-water rivers; but here is proof of the fact, for nowhere within many miles is a fresh-water river to be found. The Rio Grande will not afford one, and the Compoonee will perhaps be the nearest.

Most of the muskets were British, some few French and Spanish; and, from experiments which we made on the beach, at a mark about forty yards' distant, these natives are good marksmen. None put the ball more than six inches from the spot, and several in it. In taking their aim, they go down on the right knee, with the left foot advanced, and continue sliding the left hand outwards along the barrel until the arm is entirely extended. Every faculty seems absorbed in the act; and I much doubt, were they pushed in action, if one out of fifty could hit his mark unless he could take time for deliberate aim. Our rapid aim, and killing flying, puzzled them.

These people are generally designated as 'warlike and treacherous.' However, being constantly on our guard, and frequently armed, (visibly as well as invisibly,) it perhaps did not suit their views to display any hostile feeling towards us, although I believe they were prepared to resent any insult which might have been offered them. With the natives of Orango I had but one interview, and that did not offer any inducement to repeat it. They appeared to be a more lively, but, at the same time, more barbarous race than those of Kanyabac; and, to our questions and signs relative to bullocks, returned the same answer.

The whole of these islands are of volcanic origin;—Yomber, Honey, and Cavalho are at times inhabited, but Pullam not. On all, except Orango, vegetation appears to be luxuriant; but the extreme sandy nature of the soil of Orango renders this impossible.

At Cavalho I turned the ship's company on shore to wash and amuse themselves, as well as to derive benefit from a species of plum which abounds there, probably antiscorbutic. The seine was hauled with success; and from the abundance of cavalho

taken, I suspect this island derives its name from them. Fish are abundant throughout these islands, but rocks quite as much so. Indeed here, and at the bay in Kanyabac, were the only two favourable spots for hauling the seine with success. The porgy was frequently taken by hook from the ship. The northern end of Cavalho lies in latitude  $11^{\circ} 1' 30''$  N., longitude  $15^{\circ} 41' 15''$  W. (by the triangulation). Its extent is one mile N.N.W. and S.S.E., and half a mile in width. It cannot be approached with safety within one mile at any point, frequently three. Nothing larger than a boat drawing eight to ten inches can pass freely between it and Honey Island at low water, and then only when the sea is smooth, as the whole space occupied by the islands of Pullam, Honey, and Cavalho, and three miles to the westward, is replete with danger for vessels. Three miles north in the meridian of Cavalho it breaks at low water, and from thence, by a wide curve, to six miles south-west of Pullam, should not be approached. The depth decreases suddenly from 24, 15, 6, (fathoms) on shore. Indeed, wherever the greatest depths occur (that is above 15), there is danger near.

I observe in the translation of Baron Roussin's Memoir, that (speaking of Kanyabac) the trees called Pullam-trees in the country, are 'Pullam-trees,'—'palm-trees.' I am surprised at this mistake, as it is well known that the Pullam-tree, connected too with the pagan superstitions of the natives, is the bombax, or silk cotton, and has no reference to the palm. Indeed, Pullam Island, which is shortly after described as deriving its name from the 'large trees with which it is covered,' can hardly boast half a dozen palms, which hide their diminished heads beside the more majestic Pullam-trees.

On Pullam Island, where I found landing good, I collected some roots which grew very abundantly. They have a very acrid taste, and deprived one of my boat's crew (from sore tongue, having been foolish enough to taste it) of his speech for half an hour; and, possibly, some such incident as this, though more serious, was the origin of its having been formerly named Poison Island, as appears on the old charts. The plant has a lily stem and flower, and is shaped something like a turnip; another has the bulbous root of the lily. Some of these were preserved; but they had already commenced their shoots, anticipating the rainy season.

The south end of Pullam lies in latitude  $10^{\circ} 51' 53''$  north, longitude  $15^{\circ} 43' 5''$  west; but the shoals extend from the extreme south-west, four miles and three quarters, and the five-fathom line seven miles.

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The Gambia, considered in a mercantile point of view, and as regards supplies, appears to me to offer more decided advantages than any of our possessions on the coast of Africa; and may, indeed, be said to be the only point where anything approaching to trade can be satisfactorily pursued. Even in its present state it is by far the most healthy part of the coast; and, had a portion of the liberality of government to Sierra Leone been extended to Bathurst and its dependencies, I feel satisfied that, long ere this, it would have acquired that character which eventually, with infinite labour, it will establish for itself from its own resources. What it chiefly wants, on the score of health, is the effectual drainage of the island, which, unfortunately, as fast as an approach is made to it, is destroyed by the sea, because the means employed are just below the scale which would complete the work. But even as it is, the constitutions of the residents appear to me as sound as in any part of the world, and the strongest has been here thirty years without visiting Europe. Sir Charles M'Carthy himself, with whom Sierra Leone was an absolute hobby, admitted the Gambia to be the place for invalids.

The trade of the Gambia I also consider more likely to be speedily improved than that of any other point of this coast. The merchants have formed themselves into a company, with 6000*l.* capital, to examine, and further their interests on the banks of the river above Pisania; and, at the period of our departure, were just setting forth on their first expedition. The Foulahs, it is said, on their way to the Rio Grande and Nuñez, pass the head of the Gambia; and if their objects in trading to these rivers can be equally or better effected by coming to the Gambia, there can be no doubt that they will be easily diverted from them. The supply of slaves in these markets may be thus also eventually cut off; for the Foulahs are said not to be anxious to part with their slaves, but quite the contrary, if they could otherwise procure their supplies. And the specimens of the productions of the banks of the river itself, which I examined, were of good marketable quality, not first-rate, but the best seldom come up first, and experience is requisite here as elsewhere. The following appears to have been the export trade of the Gambia last year, as collected from merchants and others conversant with its transactions; but it was hastily compiled, and is believed not to be quite complete; and many other products were sent as samples, which await a report.

#### EXPORTED IN 1830.

242 tons yellow bees-wax.	100 <i>l.</i> per ton.
2½ ditto white ditto.	135 <i>l.</i> per ton.
502 loads African teak.	3 <i>l.</i> 10 <i>s.</i> per load.
54 tons Cam wood.	12 <i>l.</i> per ton.
14,625 lbs. ivory.	3 <i>s.</i> 6 <i>d.</i> per lb.

- 1711 Bourdeaux (=60 gallons) of corn. 4 dols. = 17s. 4d. per bourd.  
 2714 ditto of lime. 2s. per bourd.  
 76,471 hides. 5d. per lb.  
 500 oz. African gold. 80s. per oz. (Merchants have shipped infinitely beyond this, but secretly, fearing piratical vessels on the coast.)  
 196 lbs. ginger. 1s. per lb.  
 52 cwt. gum-arabic. 75l. per ton.  
 82 tons African rice. 12l. ditto.  
 82 ditto Gambia ditto. 14l. ditto.  
 3443 gallons palm-oil. 2s. per gallon.  
 12 pieces of caoutchouc (a sample).  
 688 ship timbers. 5s. each.  
 9 horses entered. From 10l. to 100l. (N.B. A great number are shipped, without entry, for Sierra Leone, Cape de Verd, &c.)  
 — feathers and shells.  
 2 boxes tortoise-shell. 30s. per lb.  
 1140 country cloths and paguis. From half a dollar to 40.  
 207 bullocks (for West Indies). 6 to 16 dollars a head.  
 14 tiger skins. 5 to 10 dollars.  
 700 country mats and baskets. 5s. per dozen.  
 100 baskets of ground nuts. Half a dollar per basket.  
 225 bullocks' horns. 7 dollars per 100.  
 1476 lbs. anchilla. 10l. per cwt.

*The following articles are also in the market, but were not among the exports last year.*

Mahogany. Of various kinds, at 4l. currency, = 3l. 9s. 4d. sterling.  
 (Exchange dollar at 4s. 4d.)

Ebony. Of very good quality, grows abundantly in Salum river, and partially in Gambia. (Not searched for much.)

Various kinds of mangrove.

A kind of box.

A very hard and durable wood, called dittach, stands well under water, and used in the construction of vessels, wharfs, &c.

Toulacoula, or bitter oil. 3s. 6d. (currency) per gallon.

Cotton. Nominal or barter price, in the rough, 2d. per lb.

Indigo. In the rough cake, 2s. 6d. each.

Hemp, made into ropes or cords, and sold at about 6d. each.

Potash. About 5d. per lb.

Honey. Retailled in Mandingo country at 2s. 6d. per gallon.

Butter, same price as honey. (N.B. The natives preserve the butter by a process of melting, and retail it in the liquid state at 2s. 6d. per gallon.)

Cola nut. 3s. 9d. per 100.

Cardamums. Sold in barter, among the natives, at about 10s. the lb., and brought from a distance in the interior by the gold merchants.

Goat, calf, and bullocks' skins, dressed by the natives, but usually made into articles of use. (The natives dress these skins well by means of potash and banna seeds.)

Cayenne pepper, of all kinds, in plenty.

Beef (good, if *demanded* good), at 3*d.* (sterling) per lb.

Fowls. 1 to 1½ dollars per dozen. (Customary to charge strangers 2 dollars.)

Very good ducks. 4 dollars per dozen.

Mutton. Dear; generally private property, seldom in market.

Goats. 1 dollar to 1½ (with one or more kids).

Wines (bad season), indifferent. Claret, 5 dollars the case.

Tea. 2 dollars the lb.

Dried oysters (good).

Eggs. 14 to 16 for quarter dollar.

Nuts (ground). Half-dollar per basket.

At the season we visited the Gambia (the very termination of the dry), vegetables were hardly to be procured, and those only pumpkins. There is little inducement to cultivate more of them than is required for the consumption of the inhabitants, as during the year seldom more than one vessel of war visits the port, and then merely for a few days. And the merchant shipping are mostly navigated by natives, who care little about them; the masters, if white, residing with their owners or consignees during their stay.

Watering is, perhaps, the worst point about Bathurst. The only water to be obtained is from private wells, and by close work (in the dry season) as much as five tons per day may be obtained. This was the utmost we could manage, working night and day; and after all, it was of doubtful quality, and used by us only for cooking. Merchant vessels, however, go to Jilipe for *worse*.

Wood is to be obtained at the beach, well dried, in convenient lengths for stowage, at six shillings sterling per chord (one and a half dollars). This, taking all circumstances into consideration, is cheap; besides the saving of boats, moving ship, and exhaustion of crew, not to omit the introduction of vermin, &c. on green or moist wood.

The tides about Cape Blanco are irregular, and much influenced by the land near which they run. High water at full and change may be looked for about noon; the greatest rise, under every advantage\*, does not exceed six feet. Southward of the parallel of the Cape the indraught has a velocity of 2.6, and the offset or ebb the same. Eastward of the meridian of the Cape the tide bends northerly, and at three miles chord its velocity appears from south-west to north-east, about 2½, following the circular course into Greyhound Bay. North of the parallel of the Cape the ebb sets north and floods south, and close in shore the tide is considerably weaker than at three miles, where its greatest influence may be expected.

\* Springs and winds.

The Spanish fishermen do not appear to resort much to the eastward of the Cape. I watched the motions of four schooners and their boats, and their practice appeared to be as follows :—

Their anchorage is in a bay about three miles north of Cape Blanco, in seven or eight fathoms, where they are quite sheltered from N.N.W. to S.S.E., and when the boats inside the Cape could not work, and the anchorage there was not only unsafe but unpleasant, here they enjoyed still water. About midnight they got under-way, and worked to the northward, continuing fishing under sail until four or five in the afternoon, when they resumed their anchorage. Each vessel sent a boat round the Cape, which appeared, however, merely to stand three miles to the eastward, and then return under sail. Two of them visited the *Ætna*; and I had about half an hour's conversation with the whole party (sixteen), giving them a dram each, and some tobacco, to induce them to loose their tongues. They all appeared to be superior to the common run of Spanish fishermen, and their language was more refined than one would expect from the Grand Canary. I endeavoured to ascertain if they ever ventured deep into the bay, or as far as the opposite shore; but their reply was, that the weather was always too rough, and nothing was to be attained. This question I put to several, particularly the youngsters, who appeared anxious to communicate all they knew; but all their answers on every subject were so straightforward and open, that I do not believe in any report of their establishments on this coast. One, and the overwhelming argument, which appears to me to set the matter nearly at rest (unless, indeed, the country be strangely different from the peninsula), is, that should they attempt to build house, fort, hut, or any thing stationary on these shores, one month's weather, of the nature we experienced, would bury it in sand. If the house or fort stood, I much doubt if any consideration would induce other than a Moor, who is semi-brute, to endure such an existence as must of necessity follow. The very atmosphere is sand; and the habitations of the Moors who frequent this place are merely formed by stones three or four feet high (tabular sandstone), sheltering the north-east and west sides from the sands, over which they spread a skin and creep in. (This I give, however, from inference. The Spaniards said they covered themselves with a skin; and we found huts formed in this manner in many places.)

They appeared anxious to get us outside amongst them, and were rather disappointed when they found that they would have left the coast before that would take place, as they proposed returning to the Grand Canary in four days. They assured me that the present specimen of the weather might be taken for that of the whole year, and that very few vessels attempted to remain on



the eastern side. When informed of my object, I narrowly watched their countenances, but saw nothing indicative of alarm, rather of pleasure. I told them it was my intention to investigate every creek in the great bay, and made inquiry as to the reception I should meet from the Moors. They said, 'They are not afraid of us, but they are of the English. They have only long knives, and one or two pistols, but no muskets.' I told them I had information, and *positive*, that they had muskets; but they assured me no; and that they were hard pushed for a charge for the pistols. They appeared very grateful for the rum and tobacco I gave them, and anxious to give something in return, offering hooks, lines, and fish. They informed me that their usual fishing ground is in twenty-five fathoms, where they take fish from eight to sixty pounds, and that their average daily work is about three hundred weight in the boats. Their schooners have polacca foremasts, and when fishing they furl all the square sails in one. They appear rakish-looking vessels, and any thing but badly found. Their tonnage may be from one hundred to one hundred and fifty. I am surprised that no other nation has taken advantage of this trade. It appears to be the most economical fishery I have witnessed, and the climate one of the finest. I suspect the pirates have occasionally visited them, as they spoke with rather a significant look when they mentioned a visit from a vessel under Columbian colours. French, English, and Portuguese, have occasionally touched here and purchased their whole cargoes. The fish we met with are as follows:—Porgy, mullet of several kinds, rock cod, and red-snapper; but I have not met with soles beyond six inches in length, although I tried with the trawl. The red-snapper is what I suspect is termed bream in the old voyages.

In reply to a question, whether fresh water was to be obtained, they shrugged their shoulders, and said, 'Yes, but only fit for the Moors.' This is some distance north of their anchorage, and, therefore, will be four or five miles north of the Cape.

Some animals, of the cat tribe, having a foot about the size of a panther, with a smaller of the jackall size, appear to be plentiful about Cape Blanco, as their footmarks were found along every part of the coast that we examined; but none were seen or heard, although they must have passed our tent pretty close every night. Their marks were always fresh in the morning, as the heavy dew which falls here causes the sand to lie quiet until the sun has dried the surface. The drift-sand varies in grain from the size of hemp-seed to almost an impalpable powder, searching the nostrils, lungs, and ears. I found the small grains, equal to dust-shot, almost insupportable; but what must a gale with hemp-seed size prove? The rocks bear witness of the force of attrition on the superior surface, being in some places completely smoothed down. The bank of Arguin must, from the clouds blown off,

be constantly accumulating, and the disintegration of the cliffs is hourly altering the outlines.

The surface on the summit of the cliffs in this bay is, I may venture to say, bare, or nearly so, of vegetation. The only stray plants and bushes to be met with belong to the family of *salicornia*, specimens of which I have preserved. Some of the roots and stumps, dried, may, with other fuel, assist in supporting a fire; but they will not burn alone. On the low sandy point, under East Cape, some few scraps of fir and oak were found washed up by the sea, but barely sufficient, with fire already obtained, to kindle the before-mentioned stumps of the *salicornia*. The rough, rugged, stony elevations, had some few traces of lichens on their northern faces, where the sand does not lodge; and this comprehends every thing vegetable. The sea occasionally throws up that species of *fucus* known by the name of *dulse*, but very sparingly. Mussels and other shell-fish are very abundant at low water, and this I believe is the only food nature here presents for man, deprived of other resources.

Amongst the objects collected by the dredge two only are worthy of notice, and I suspect are entirely new. One is a *murex*, the other a *nucula*, both beautiful of their kind, and likely to prove of interest to naturalists, particularly the former. The bay must abound with a great variety, but no time could be spared for this service.

In a geological point of view this peninsula differs widely from what I had been led to expect (*viz.* an entirely siliceous formation). I examined the whole extent (as far as the northern point of Repose Bay), a distance of thirteen miles; and it is a mixture of calcareous and siliceous sandstone, approaching our coral rag, or grit, in lines of stratification dipping southerly, in various inclinations as high as  $45^{\circ}$ .

It appears to be of three kinds, and each will be found at the cliffs, throughout this extent. The lowest stratum, which is the water-line, and forms the rocks under water, in the bay and outside as deep as fifteen fathoms, is a close-grained griststone, with three-fifth parts siliceous. This is succeeded, nearly at the high water level, by one somewhat softer and more calcareous, in which the recent *pholas* is very abundant. This stratum is about eight to ten feet in thickness, and the cleavage, or lines of stratification, about  $30^{\circ}$  dip southerly. The bed above this is of a softer nature, apparently the debris of animal and vegetable matter in calcareous sand, on the lower edges of which, in contact with the lower stratum (occasionally spread through its own mass), numerous fossil helices occur. In this mass, not having any lines of division, are many cavities, from which a fine powder, mealy and entirely calcareous, was raked out, by which I am led to

conclude that they contained organic remains, which decomposed on the admission of the atmosphere. The holes at their edges had much the appearance of those in cheese where the mites are tumbling out. Above this bed, two others, varying each from four to six feet of grit, are imposed, the inferior lines of division or cleavage at an angle of 30 to 40, and the superior at 45. This is again capped by the superstratum, a loose, rubbly, calcareous sandstone, with slight admixture of silex. The lines of division, in all the stratified beds, I found to arise from layers of quartz sand, which cause it to cohere very slightly, and the result is a constant disintegration of the whole line of coast. From some fragments exposed on the hills, it appears to harden considerably on exposure, if not affected by sea-water; and in some detached portions I have found lumps of entirely quartz sand, so compact as to ring like clink-stone. The summit of this peninsula is composed of lines of sand hills and rocky eminences, just what one would expect to find if the sea were to quit its position, and show us the beds over which it flows. In every position, where a bush, or rocky islet, is prominent, there, on its southern side, you will surely find its sand-hill,—a proof of the prevalent winds, as well as an admirable model of the formation of shoals, &c. under water, and pointing out most perfectly the ‘steep to’ approaches to banks past which rapid streams or currents flow, with their concomitant shallow tail, formed by dead water or eddies.

With the exception of these newly-formed and forming sand-hills, the whole surface is covered, in a most extraordinary manner, with shells, of all dimensions, and of the species generally found in their recent state in the bay.

To suppose that these immense beds, covering (as far only as I have examined) a space of thirteen miles, were collected by natives, who but seldom, and then only few at a time, visit this spot, is beyond probability. Yet they are loose, and in no instance have I found them imbedded in the stone. The helix I have found in its living state, attached to plants, but they do not resemble either the loose shells of the surface, or those imbedded in the lower strata. That the sea should have lifted her waves over heights of sixty to eighty feet is also improbable. Yet there they are, and the strongest argument against their being brought there for food for bird or man, is their generally perfect state. Had they been used for food, the shells would have been broken or burned, to extract the fish of the univalves, but they are perfect, even to their finest edges. The whole formation bears some resemblance to Bermuda, with the exception of the mixture of silex. The lines of stratification would favour its submarine formation, and the constant lines of deeply-inclined southerly dip particularly so. It is decidedly of four different characters,

and here and there we meet a wedge-shaped deposit, forming by itself a bed, of three to four feet thick in the middle, tapering north and south, but its base always straight, resting on one of the harder formations. In some parts, the coast presents a perfect flat of rock, which has a most remarkable appearance. I had at first viewed it from a height of fifty feet above it, and mistaken it for sand, recently washed by the sea; yet its height was too great for such an admission. Upon examination, I found this appearance to proceed from the surface of highly-inclined strata, dipping southerly, and worn smooth by the force of attrition of the sand passing to the southward. It exhibited long wavy lines, of various shades, like the agate-looking limestone of Gibraltar, or stalagmite, and extended more than a mile.

Cape Blanco, by the mean of our observations, is in  $20^{\circ} 46' 26''$  north latitude, and  $17^{\circ} 4' 10''$  west longitude. The mean dip, with the axis correct, was  $57^{\circ} 27' 4''$ ; inverted,  $57^{\circ} 1'$ . The table (in the following page) will show the temperatures, prevailing winds, &c. &c. at all the ports visited by the *Ætna*, in 1830, 1831, 1832.

On the 14th of June, 1830, we were becalmed in lat.  $15^{\circ} 27' 9''$  north, and lon.  $17^{\circ} 31' 50''$ , and I availed myself of the opportunity to make a few experiments on the currents, temperatures, &c.

Two boats were lowered, and, by the lightest,—a gig which two men could lift,—the water-bottle and thermometer were sent down. The boat was allowed to ride fifteen minutes, until the line became perpendicular, with 545 fathoms, for which I allow 540 fathoms. Had the current been tried before that period, the result would have given three or four knots; but when the action of the line, to regain the perpendicular, ceased, I found it to set south (true) 0.75 per hour.

I now caused three baréças to be slung, (with lines and deep-sea leads attached,) and simultaneously let go from the gig, still riding by the line of 545 fathoms. No. 1 had 40 fathoms; No. 2, 20; No. 3, 10; and, during an interval of three minutes' drift, it was found that No. 1 had gained 1 fathom of No. 2, and No. 3 had gained 3 fathoms of No. 1; showing that the current ran at 40 fathoms with nearly the same velocity as at 10 fathoms, and that the rate of the whole differed little from that of the surface. The temperature, at 540 fathoms, was  $43^{\circ}$ , at the surface  $81^{\circ}$ , of the air  $83^{\circ}$ ; but one fact struck me as deserving remark, *viz.* that although all the baréças started from the same point, when taken up they had diverged 50 feet from each other.

*Temperatures, prevailing Winds, &c. at all the Ports visited by the Ætna in 1830, 1831, 1832.*

PLACE.	Date.	TEMPERATURE.						Prevailing Winds.	Commencement of Tornadoes, Rains, &c.
		Air in Shade.			Sea Surface.				
		Min.	Max.	Mean.	Min.	Max.	Mean.		
Madeira .....	8 to 12 Nov. 1830.	65	74	68.3	67	75	70.6	{ Indications of bad weather about June;—the tornadoes expected the end of that month.—N.B. Experienced them off Senegal June 15, 16, and 17, 1831.	
Teneriffe .....	18 to 20 Nov.	65	73	69.4	70	74	72.2		
Goree .....	27 Nov. to 7 Dec.	71	83	75.8	72	80	75.1		
Revisited .....	10 to 12 June, 1831	73	78	75.1	71	77	74.1		
Gambia .....	9 to 11 Dec. 1830	71	83	77.2	73	79	76.4	{ During season of Harmattan,—rainy season just terminated, 9th Dec. on which occasion the colours are hoisted and a gun fired. Second visit in May and June, 1831;—end of dry season;—symptoms of approaching rains,—squalls, with rain about 1st of June, 1831.	
Revisited .....	23 May to 6 June 1831	70	80	75.0	72	82	76.8		
Sierra Leone .....	17 to 21 Dec. 1830	78	86	80.5	78	84	81.4	{ Experienced slight tornado and rains,—termination of rainy season.	
Isles de Los .....	25 to 31 Dec.	79	86	81.7	80	84	82.3	{ Rainy season commences in April,—ends in December.	
Between Isle de Los and R. Pongas ..	January, 1831	78	90	82.6	80	85	82.8	{ The rainy season between Gambia and Isles de Los ranges between the 1st of April and 1st of June, commencement;—1st to 31st December, termination. Off Conflict Reef and Bijogaas, 12th, 13th, 14th, 15th May, 1831, experienced rains and tornadoes.	
Between R. Pongas and Cape Verga ..	February	76	90	80.6	78	85	82.7		
Cape Verga and R. Nuñez .....	5 to 22 March	76	87	80.8	76	87	81.5	{ No tornado up to the 19th May, but many threatening indications.	
Entrance to R. Nuñez	23 March to 12 Ap.	77	87	81.1	78	85	82.0		
R. Nuñez and Conflict Reef .....	13 April to 13 May	76	85	80.5	79	86	81.6	{ Spaniards affirm that there is no rainy season here, but strong north and north-easterly winds the whole year.	
Off Bijoga Islands	6 April to 19 May, 1832	69	89	78.1	68	89	77.6		
Cape Blanco .....	24 June to 12 July	64	75	68.6	64	76	67.6		